Smoking Reduction: Effect on Biomarkers of Cardiovascular Risk Factors

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Cigarette smoking is a major risk factor for cardiovascular disease. Despite effective smoking cessation treatments, only a small percentage of smokers attempt to quit smoking each year. Smoking reduction is a potential treatment method for those smokers who are not willing or able to quit. This study examines the effects of reducing cigarette smoking on 4 biomarkers for cardiovascular disease: carbon monoxide (CO) levels, white blood cell (WBC) count, low-density lipoproteins (LDL) and high-density lipoproteins (HDL) levels. Subjects were recruited from the local metropolitan area by advertisements in the local media. The data from 10 male subjects and 10 female subjects have been analyzed at this time. Treatment consisted of subjects reducing their cigarette smoking by 25%, 50% and 75% in two-week incremental periods. Subjects supplemented their cigarette use with 4 mg nicotine gum (Nicorette) to help alleviate withdrawal symptoms during the reduction process. Data collection occurred at the end of week 4 (50% reduction), week 6 (75% reduction) and at two follow up visits (weeks 8 and 12). Subjects smoked an average of 25.74 (SD=5.19) cigarettes per day (CPD) during baseline conditions and these values decreased to 11.8 (SD=2.43) CPD at week 4 and 7.34 (SD=3.02) CPD at week 6. CO levels decreased from 19.55 ppm (SD=10.13) at baseline to 10.75 ppm (SD=4.29) and 7.34 ppm (SD=3.02) at week 4 and 6 respectively. No significant effects were observed on LDL or HDL levels. WBC count was slightly decreased but only at week 6. Smoking reduction may reduce risk factors for coronary artery disease with the decrease in CO levels and WBC count. Even though significant changes were not observed with LDL or HDL levels, it is possible that significant results could occur if the duration at each of the reduction levels is extended.

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